

Learning From Their Mistakes:

Russia's *Arena* Active Protection System

by First Lieutenant Adam Geibel

As a result of the Russian Army's mauling at the hands of the Chechen rebels — particularly the disastrous assault on Grozny on 31 December 1994, the Kremlin made a shocking admission of shortcomings at a televised scientific-technical conference at Kubinka on 20 February 1995.

Defense Minister Pavel Grachev admitted that unnecessary casualties were sustained due to the T-80Y's vulnerabilities: short range, flammable fuel and ammunition stowage, thin upper surface armor.

Bitten by their own RPGs, the Russians have developed a defensive countermeasure that solves some of the technological problems addressed at Kubinka.

The *Arena* Active Protection System, developed at the Kolomna-based Engineering Design Bureau, is designed to provide protection from antitank grenades and ATGMs, including those with top-attack warheads. *Arena* is foreseen as useful, both on battlefields where the latest generation of 3-8 km ATGMs prevail and during peacekeeping operations and LICs, where the greatest threats are from light antitank weapons.

Arena includes three major subassemblies. Inside the turret, and taking up about 30m³, is the target detection and tracking equipment (computer, TC's control panel, command signals converter unit).

The radar itself is fitted to a 'Kladio'-style folding radar mast, mounted on the centerline at the rear of the turret roof. The octagonal radar panel assembly is fairly large, approximately 1.5m³.

Launchers, which the makers call 'silos,' are mounted around the turret,

reminiscent of the BDD 'Horse Shoe' armor. They provide a 110-degree arc of protection, centered on the gun tube (Russian reactive armor kits weigh the same as an active kit, but only cover a 35-40 degree arc). The system has 22 to 26 rounds, depending upon the type of tank, which are mounted so that they provide overlapping 'fields of fire.' Unlike reactive armor, an expended round will not leave a hole in the defensive curtain.

The silos are armored against splinters and bullets to prevent accidental detonation of the rounds. The whole 27 V system weighs 1,000-1,100 kg and consumes 1 kW of power.

The description of the system in use sounds fairly simple. Prior to entering a hostile area, the TC turns the system on. *Arena* automatically tracks incoming rounds, ignoring incoming rounds until they're within 50m, then engaging anything approaching at speeds of 70-700 m/s. False targets, such as outgoing rounds, near misses, birds, small projectiles (like bullets or splinters) would be ignored.

When fired, the round detonates the warhead at a stand-off distance of a few meters, so that the double-charge ATGM warheads designed to defeat reactive armor are rendered impotent. Time to detect and destroy a threat is .07 sec, with .2 to .4 sec for the system to reset. The danger zone for accompanying infantry is 20-30m.

If necessary, the TC can manually override and fire the system. The number of remaining rounds are displayed on the TC's control panel. The rounds are rectangular and reloadable by the crew.

The *Arena* system, which can be fitted to new production tanks as well as

existing ones scheduled for rebuilds, is expected to double the tanks' survivability during assaults and reduce losses from 1.5 to 1.7 times.

Arena-fitted tanks are not supposed to create electromagnetic interference while working with other tanks. The manufacturers also claim that the system is extremely immune to ECM.

Support for the system has also been addressed by the manufacturer. Subsystems are modular and can be pulled for fast replacement. Test and control equipment is mounted on a cross-country capable truck, for forward maintenance.

Like the T-90, this system may not be fielded in substantial numbers with Russian forces for some time, due to budgetary constraints.

References:

"ARENA: Active Protection System For Tanks," V. Kashin, *Military Parade*, May-June 1996, pp. 32-35.

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